

REMARKS/ARGUMENTS

In a previous Action, the examiner objected to the drawings as not showing every feature of the invention specified in the claims. Fig. 2B was amended to show the main storage 110 containing multiple images 110a-110n, as claimed in claims 1 and 14. The specification was accordingly amended to discuss the changes to Fig. 2B. In paragraph 2 of the DETAILED ACTION of the present action, the examiner has objected to the amendment to the specification as new matter. As the objected to matter has been amended to overcome the objection, the objection is traversed, and reconsideration is requested.

The previously amended paragraph at page 7, line 24 to page 8, line 14 has been further amended to explain that main storage may contain a plurality of host images. The main storage also includes a plurality of queues and a queuing mechanism. This is not new matter. At page 8, line 17, the specification as originally filed states: "... to the main storage where a plurality of queues can be setup for processing and storage of the data... ." At page 8, lines 21-24, the specification as filed states: "Once the appropriate response or data is retrieved from the servers, these multiple queues are interrogated simultaneously to determine the appropriate application that the data needs to be sent to." These quoted sentences establishes that there are multiple queues in the main storage, and that the queues are used to receive and send data to the servers.

The queuing mechanism is further explained in more detail, starting at page 8, line 28. In original claim 1, the queuing mechanism is claimed as being in main storage. The queues are further described as being in main storage. For instance, at page 10, lines 1-3 is the following quote: "For both QDIO input

and output queues, main storage is used as the medium by which data is exchanged between the program and the adapter." Further, at page 10, lines 9-10: "Both input and output queues are constructed in main storage ... ."

The idea that there are separate images for virtual systems is taught at page 10, lines 21-24: "In one preferred embodiment where separate images are provided for virtual systems, each virtual system can also be assigned a separate queue set in the queuing mechanism."

Multiple host images is clearly taught a page 33, line 1-2: "A table is provided which maps all the Host images and Host Device Addresses which will be using the QDIO interface ... ."

Providing access across virtual guests or multiple logical partitions is clearly taught at page 16, lines 11-15: "The design of the present invention provides the ability to share access to this device across multiple communication stacks, multiple priorities and multiple virtual quests and/or multiple logical partitions."

The specification and claims 1 and 14 has been amended to disclose and claim that data may be exchanged between host images in main storage for servers. It is submitted that the specification and claims, as amended, do not contain new matter, and allowance is requested.

In the DETAILED ACTION at Claim Rejections - 35 USC 103, in paragraphs 1-22, claims 1-2, 4, 6, 10-23, 14-15, 17, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Calderale et al. (hereinafter Caldareale) in view of Provino et al. (hereinafter Provino).

As set forth in previous amendments, Caldarale discloses a network input/output system for sending and receiving messages between a large scale computer system and associated communications networks. Caldarale describes a main storage capable of establishing communication between application servers and application users wherein the main storage is only accessible by means of a single Operating System environment (Application Server). Only one input, output and control (UPICT) queue is defined. The Network Interface Controller is totally dedicated to the single Operating System environment. Caldarale describes the ability to control multiple I/O devices through the same interface. Caldarale discloses multiple Network Interface Controllers (NIC) in a single Application Server see Col. 7, line 35). In Caldarale, there is only one main storage unit 24 shown in Fig. 1, and there is no teaching or suggestion that the main storage unit may contain more than one image, each image containing a separate application server, as claimed. Also, there is no teaching or suggestion in Caldarale that queues may be set up for more than one application server, an interface element capable of establishing processing communication between an application user, and using an interrogator operating independent of any application server for examining multiple queues in the queuing mechanism to transfer data between the application server and the application user. The examiner has cited the Network Interface as being the same as the claimed interface element and the interrogator. However, the I/O microcode and functions cited by the examiner all require

interrupts to work correctly. In Caldarale, interrupt codes and flags are essential to correct I/O operations. See Col. 10, lines 33-39: "If the interrupt flag associated with the NIOP Input Queue is set at Test Step 106, Yes path 108 is taken to Step 110, where the Network I/O Microcode presents an interrupt to the Exec 30. This interrupt is an indication that a Communications Program process needs to be activated to process the input message." See also at Col. 17, lines 26-28: "The Interrupt Code (IC) 320, in Bits 0-5 of Word 0, indicates that the CSW is a CPCSW when IC is zero." Also, Col. 17, lines 57-60: "If an error is detected on an NIOP Queue access, an NQCSW is written to the UPI Control Table and the Network Interface is disabled. For the NQCSW, the Interrupt Code (IC) 342 is set to sixteen decimal." And Col. 17, line 54 to Col. 18, line 4: "Bits 6-11 and Bits 13-14 must be zero. Bit 12 of the Internal Status is the Interrupt bit. If the Interrupt Flag has been set in the Interrupt Control Word, then an NQCSW is generated to return the status to the IP-based software. The Interrupt Control Word is used by the NIOP to determine if IP-based software requires a positive indication that the completion status has been stored to the NIOP Input Queue." Col. 18, lines 7-9: "The Interrupt Control Word must have zeros in Bits 0-34 and the Interrupt Flag in Bit 35. If the Interrupt Flag is set when an input transfer is completed, then an NQCSW is presented to the UPICT (in addition to presenting completion status in the NIOP Input Queue)." This is prior art to the present invention.

In the present invention, communication is provided to multiple application servers between images provided for virtual systems, each virtual system assigned to a separate queue set in the queuing mechanism (see page 20, lines 21-24). Claims 1 and 14 make clear that the claimed apparatus establishes processing communication with more than one application server. An

interrogator is claimed for examining multiple queues in the queue mechanism to transfer appropriate requests, responses and data between multiple application servers and an application user, thus having the ability to manage queues from multiple different application servers, not just a single application server as in Caldarale, all without an interrupt to any running program. This ability is fully explained at page 16, lines 11-21 of the specification.

Further in Cladarale, an apparatus is disclosed for providing data transfer between main storage and only one application server. Claims 1 and 14 claim transferring data between multiple application servers wherein an interrogator examines multiple queues to transfer appropriate requests, responses and data between applications servers and application user(s).

Provino is directed to a virtual file system accessing subsystem for use in connection with a computer system connected in a computer network. The computers are of the conventional stored-program computer architecture, each having mass storage (see Col. 5, lines 3-5). There is no teaching or suggestion in Provino that the mass storage on any of the computers may be separated into multiple images, with an application server in a separate image. Each computer in the network of Provino has only one operating system. The operating systems that are mentioned are the Unix operating system (Col. 2, line 26), MS-DOS and Windows (Col. 2, line 40) and Microsoft Windows-NT (Col. 5, line 49). As discussed above, one of the operating systems may reside at a time in the main storage of a computer of the network of Provino. Also, it is well known that each of the operating systems of Provino is interrupt driven. In Provino, if there is no interrupt, there is no communications. Previously supplied for the examiner's information, User's Guide Microsoft Windows

Operating System Version 3.1, 1985-1993; pages 189, 190, describes how to set the Interrupt Request Line (IRQ), page 239 for the proper of the IRQ for the mouse, page 251 for the proper IRQ for printing from Windows, and page 263 for the proper IRQ for accessing a serial port. Also previously supplied was computer generated instructions for Windows 98, Microsoft Corp. 1981-1998, shows how to change the resource settings for a hardware device, and an example of the Interrupt Request (14) for a PCI Bus Master Controller and an Interrupt Request "06" for a Standard Floppy Disk Controller.

There must be at least a teaching or suggestion in the references cited by the examiner that Calderale and Provino may be combined. Provino is also an example of the prior art before the applicant's invention. In Provino, each logical partition must rely on interrupts and I/O type operations to send data from one logical partition to another. As fully explained in the present application, this is not necessary because queues are set up in main memory in different logical partitions, which queues are interrogated independent of the servers to transfer requests, responses and data between the application server and application users. Even if Calderale and Provino were combined, a system would result in which requests, responses and data were transferred between logical partitions using I/O type commands requiring interrupts to work correctly, and not queues, a queuing mechanism, an interface element and an interrogator, as claimed in claims 1 and 14.

In the present invention claimed in claims 1 and 14, the main storage contains a queuing mechanism for retrieval and storage of incoming and outgoing data without causing interrupts in an running programs (claims 1 and 14), a plurality of queues located in main storage for providing continuous running of programs

without interruptions. There is no teaching or suggestion in Provino that data may be retrieved or stored without interrupts, because in the operating systems of Provino, interrupts are required to retrieve or store data.

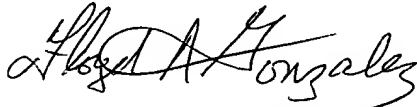
It is respectfully submitted that claims 1 and 14, and all claims depended therefrom are allowable under 35 U.S.C. 103(a) over Caldarale in view of Provino, which allowance is respectfully requested.

Under Claim Rejection - 35 USC 103, claims 5, 7, 8, 3, 16, 9, 18, 21 and 22 are rejected under 35 U.S.C. 103 (a). Carbillet cited by the examiner is an information processing system comprising at least two processors. In Carbillet, when an exchange of data is necessary, for example, when the processor of a first module wishes to read the static memory of a second module, the processor of the second module is temporarily put in stand-by mode. Thus in Carbillet, there is an interruption in running programs when data is exchanged. In Brandt et al. cited by the examiner, an improved high-speed data communications system is disclosed. In Brandt, there is no teaching or suggestion that main storage queues in separate images may transfer data by a queuing mechanism, interface element and interrogator, as claimed. In Casper, cited by the examiner, an attached storage media line having a self-timed interface is disclosed. There is no teaching or suggestion that data may be exchanged between images in main storage as claimed. In Leger et al. cited by the examiner, a CMA controller having multiple channel and buffer pool is disclosed. There is no teaching or suggestion that data may be exchanged between images in main storage. It is respectfully submitted that the remaining claims are allowable under 35 U.S.C. 103(a) over the Caldarale in view of Provino

further in view of any combination of Carbillet, Brandt, Casper, or Leger, which allowance is respectfully requested.

It is respectfully submitted that the application is now in condition for allowance, which allowance is respectfully requested.

RESPECTFULLY SUBMITTED

A handwritten signature in cursive script, appearing to read "Floyd A. Gonzalez".

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